170611

REGION II RST HEALTH AND SAFETY PLAN
EMERGENCY RESPONSE/SITE INVESTIGATION

(Revised 8 December 2003)

TDD No. 02-05-04-0005

Site Name: Matteo Iron and Metal Site

Site Address:

Street No. 1708 Route 130

City West Deptford Township

County/State Gloucester, NJ

Directions to Site: (See Attached Map)

Start at RST office. Merge onto CR 514(Woodbridge Ave) toward New Jersey Turnpike. Take New Jersey Turnpike South (61.8 miles). Take Exit 3 (RT-168N exit) toward Camden/Philadelphia. Merge onto I-295 S toward Walt Whitman BR/Del Mem. BR.. Follow sign to Del Mem Br. Take the CR-644 Jct exit 22 to Woodbury/Red Bank. Take the CR-644E ramp to Woodbury and continue on Crown Point Rd.

Historical/Current Site Information:

A scrap metal recycling facility currently operates at the northeast portion of this site which is approximately 80 acres in size. Prior to its purchase by Matteo & Sons, the property was a farm. It is situated near the confluence of Hessian Run and Woodbury Creek, approximately one mile east of Delaware River. NJDEP has conducted numerous inspections of the site dating back to the early 1970's. During these inspections it was noted that portions of the property had been used to landfill domestic and industrial waste. In addition, it has been reported that at one time the current operator recycled vehicle batteries and landfilled the battery casings near Hessian Run. Reviews of historical aerial photographs have confirmed that significant disturbances occurred at this area during the past. A site inspection conducted in 1991 revealed partially crushed 55-gallon drums containing various material that appeared to be waste petroleum product. Wire was also burned for recovery of metal. Early Responsible Party and NJDEP investigations identified PCBs and high level of lead and cadmium in Site soils and lead in a Site potable well. Preliminary sampling also confirmed that the sediments in Hessian Run are contaminated with organic compounds and lead. Lead was also found in the marsh areas adjacent to the battery casing disposal area. A subsequent EPA investigation estimated the volume of land filled battery casings on Site to be approximately 235,000ft^3.

Current Activities

RST will supply personnel to perform a survey of drums located near the front of the property and determine if any material is contained in these drums. RST personnel will conduct air monitoring for organic vapors, LEL and radiation. Any content of drums will be sampled and hazcatted. RST will collect a total of four composite samples from the outside paved area at the facility and the street curb outside of the facility for PCB and heavy metals analysis. RST will sample white powder on the soil for multiple parameters. RST will collect 75 initial surface soil samples for PCB and heavy metal screening by SAT. SAT personnel will set up sample grids and will be onsite with XRF, GPS and other field instruments.

Incident Type: ( ) Air Release - _____
( ) Spill - _____
( ) Fire - _____
(X) HW Site - Scrap metal recycling facility

Location Class: (x) Industrial (x) Commercial (x) Urban/Residential ( ) Rural

USEPA Contact: Nick Magriples
Original HASP: Yes or No N
Lead RST: Aaron Levy

Date of Initial Site Activities: 04 /14 /05
Modification Number: _____
Site Health & Safety Coordinator: Aaron Levy
Health & Safety Alternate: Aaron Levy

Response Activities/Dates of Response (fill in as applicable)

Emergency Response:	( ) Perimeter Recon.	_____
	( ) Site Entry	_____
	( ) Visual Documentation	_____
	( ) Multi-Media Sampling	_____
	( ) Decontamination	_____
Assessment:	(X) Perimeter Recon.	04/27/05
	(X) Site Entry	04/27/05
	(X) Visual Documentation	04/27/05
	(X) Multi-Media Sampling	04/27/05
	(X) Decontamination	04/27/05

Physical Safety Hazards to Personnel :

(X) Heat ( ) Cold (X) Precipitation ( ) Confined Space (X) Terrain
(X) Walking/Working Surfaces ( ) Fire & Explosion ( ) Oxygen Deficiency
( ) Underground Utilities ( ) Overhead Utilities ( ) Heavy Equipment
(X) Unknowns in Drums, Tanks, Containers (X) Ponds, Lagoons, Impoundments
(X) Rivers, Streams ( ) Pressurized Containers, Systems ( ) Noise
(X) Illumination ( ) Nonionizing Radiation ( ) Ionizing Radiation

Biological Hazards to Personnel

( ) Infectious/Medical/Hospital Waste (X) Non-domesticated Animals (X) Insects
(X) Poisonous Plants/Vegetation ( ) Raw Sewage

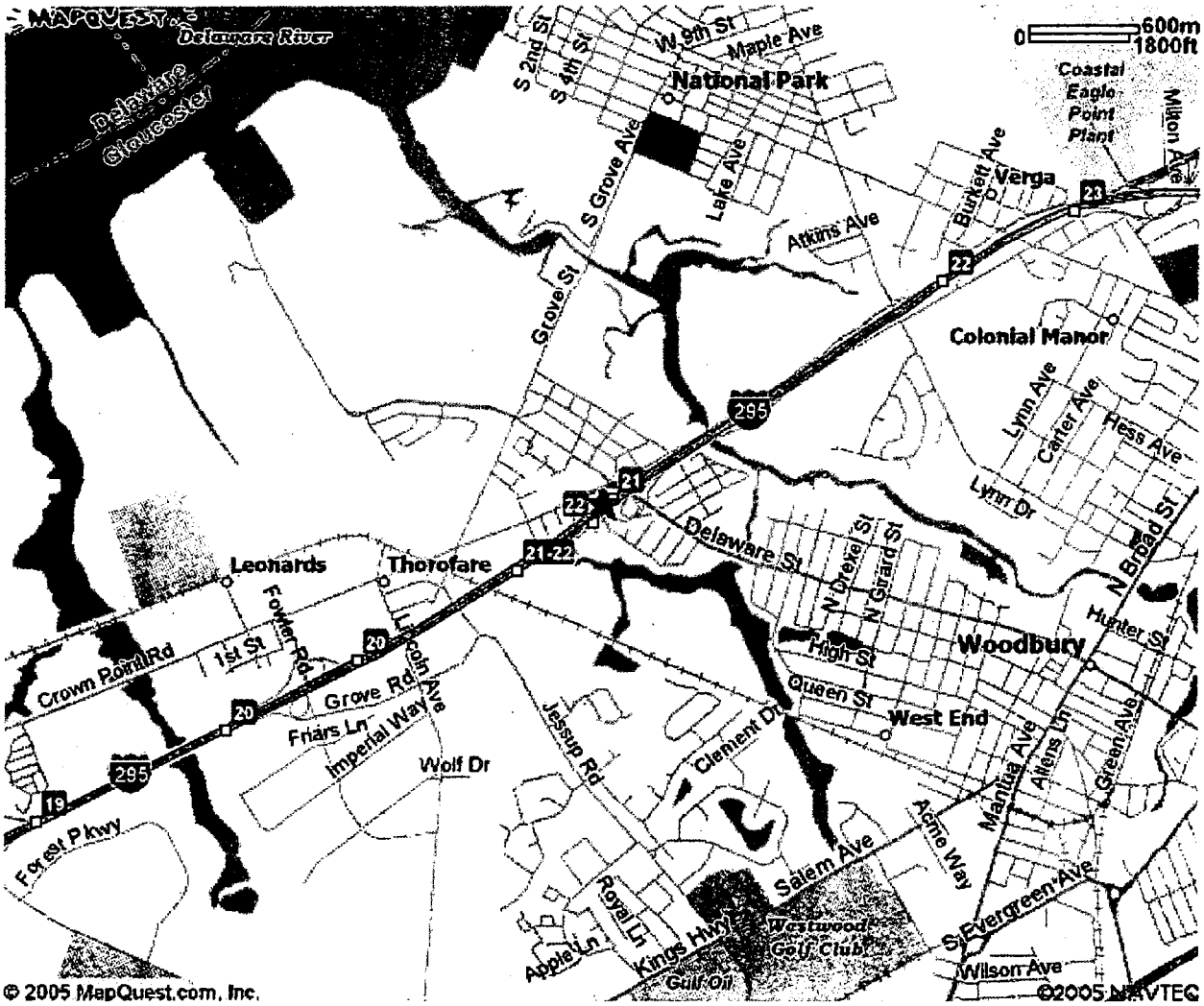
Training Requirements

(X) 40 Hour General Site Worker Course with three days supervised experience

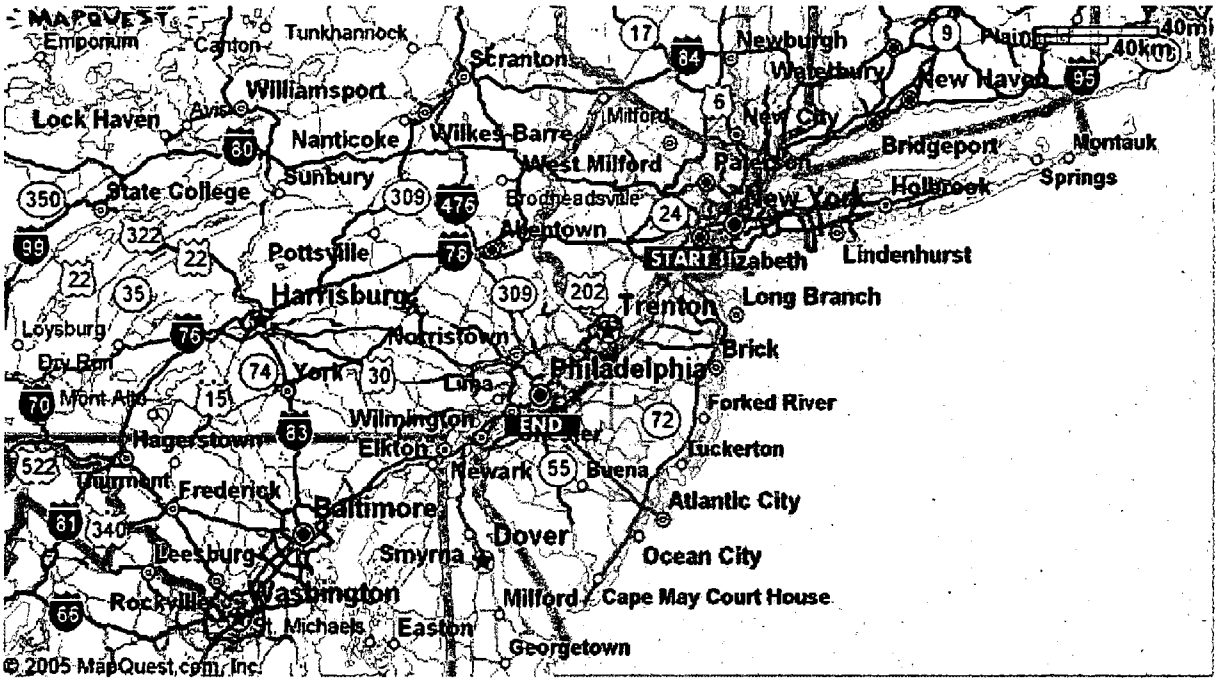
( ) 24 Hour Course for limited, specific tasks with one day supervised experience
( ) 24 Hour Course for Level D site with one day supervised experience
(X) 8 Hour Annual Refresher Health and Safety Training
(X) 8 Hour Management/Supervisor Training in addition to basic training course
( ) Site Specific Health and Safety Training
( ) Pre-entry training for emergency response skilled support personnel

Medical Surveillance Requirements

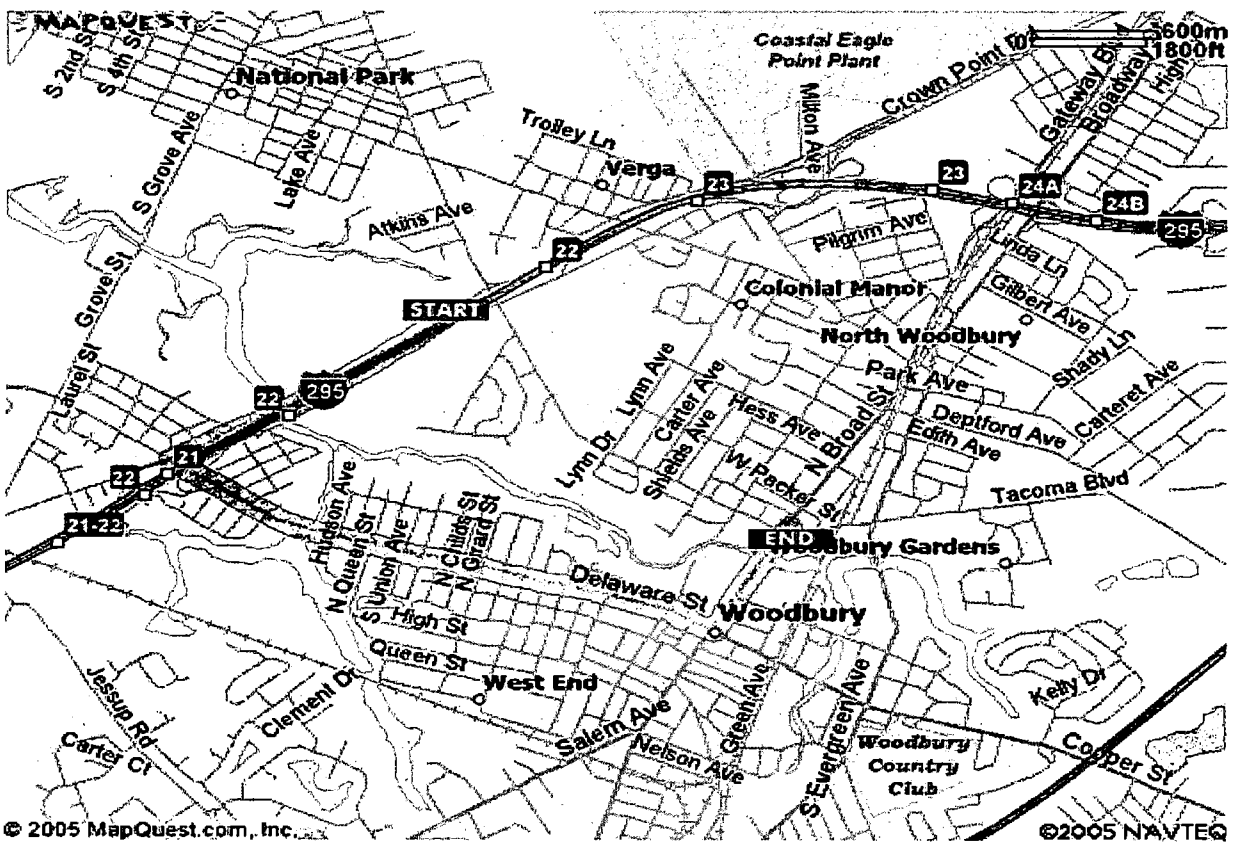
(X) Baseline initial physical examination with physician certification
(X) Annual medical examination with physician certification
( ) Site Specific medical monitoring protocol (Radiation, Pesticide, PCB, Metals)
( ) Asbestos Worker medical protocol
( ) Exempt from medical surveillance _____.
(X) Examination required in event of chemical exposure or trauma



Location of Matteo Iron and Metal Site



Route to Matteo Iron and Metal Site from RST Office



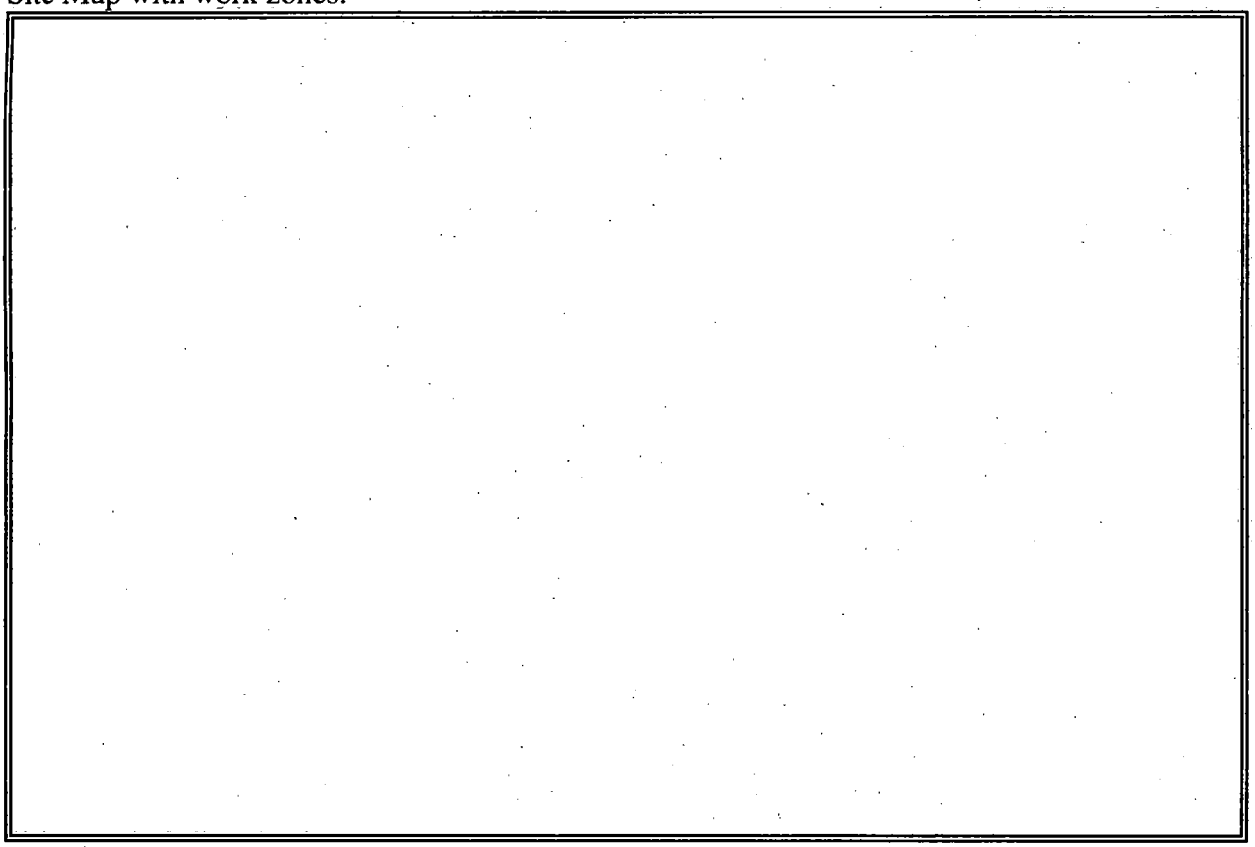
Route to Underwood Memorial Hospital

Physical Parameters	Chemical Contaminant Fuel Oil #2 CAS# 68476-30-2	Chemical Contaminant PCBs/Arochlor 1242 CAS# 53469-21-9	Chemical Contaminant Phenol CAS# 108-95-2
Exposure Limits IDLH Level	____ ppm ____ mg/m³ PEL ____ ppm 100 mg/m³ TLV ____ ppm ____ mg/m³ IDLH	____ ppm 1 mg/m³ PEL ____ ppm ____ mg/m³ TLV ____ ppm 5 mg/m³ IDLH	5 ppm 19 mg/m³ PEL ____ ppm ____ mg/m³ TLV ____ ppm 250 mg/m³ IDLH
Physical Form (Solid/Liquid/Gas) Color	____ Solid X Liquid ____ Gas Brown Slightly Viscous Color	____ Solid X Liquid ____ Gas colorless to light Color	X Solid ____ Liquid ____ Gas Colorless to light pink Color
Odor	none	Hydrocarbon	Sweet, Acrid
Flash Point Flammable Limits	136 Degrees F ____% UEL ____% LEL	N/a Degrees F or C ____% UEL ____% LEL	175 Degrees F 8.6 % UEL 1.8 % LEL
Vapor Pressure Vapor Density	Low mm/Hg N/a Air = 1	0.001 mm/Hg N/a Air = 1	0.4mm/Hg. 3.24 Air = 1
Specific Gravity	0.8654Water = 1	1.39 Water = 1	1.06 Water = 1
Solubility	insoluble	Insoluble	9%
Incompatible Material	Oxidizers	oxidizable organic materials, metals, bases, chlorates, carbides, water	strong oxidizers, calcium hypochlorite, aluminum chloride, acids
Routes of Exposure	X Inh ____ Abs X Con X Ing	X Inh X Abs X Con X Ing	X Inh X Abs X Con X Ing
Symptoms of Acute Exposure	Inhalation causes giddiness and headaches. Ingestion causes nausea, vomiting and cramping. Aspiration causes severe lung irritation.	Irritation of eyes skin, dermatitis	Irrit eyes, nose, throat; anor, low-wgt; lass, musc ache, pain; dark urine; cyan; liver, kidney damage; skin burns; derm; ochronosis; tremor, convuls, twitch
First Aid Treatment	Eyes: Irrigate Immediately Skin: Soap flush immediately Breathing: Respiratory support Ingestion: Immediate medical support. DO NOT induce Vomiting.	Eyes: Irrigate Immediately Skin: water flush immediately Breathing: Respiratory support Ingestion: Immediate medical support	Eyes: Irrigate Immediately Skin: Soap wash immediately Breathing: Respiratory support Ingestion: Immediate medical attention
Ionization Potential	10.6 eV	N/a eV	8.5 eV
Instruments for Detection	X PID w/ ____ Probe ____ FID ____ CGI ____ RAD ____ Det Tube ____ pH Other Data Ram	____ PID w/ ____ Probe ____ FID ____ CGI ____ RAD X Det Tube ____ pH Other ____	X PID w/ ____ Probe ____ FID ____ CGI ____ RAD ____ Det Tube ____ pH Other X

Physical Parameters	Chemical Contaminant Lead CAS# 7439-92-1	Chemical Contaminant Zinc Oxide CAS# 1314-13-2	Chemical Contaminant Cadmium CAS# 7440-43-9
Exposure Limits IDLH Level	____ ppm____mg/m³ PEL ____ ppm 0.05 mg/m³ TLV ____ ppm 100 mg/m³ IDLH	____ ppm 5 mg/m³ PEL ____ ppm ____ mg/m³ TLV ____ ppm 500 mg/m³ IDLH	____ ppm .005 mg/m³ PEL ____ ppm ____ mg/m³ TLV ____ ppm 9 mg/m³ IDLH
Physical Form (Solid/Liquid/Gas) Color	X Solid ____ Liquid ____ Gas soft gray Color	X Solid ____Liquid ____ Gas white Color	X Solid ____ Liquid ____ Gas ____ Color
Odor	none	none	
Flash Point Flammable Limits	N/a Degrees F or C ____% UEL ____% LEL	N/a Degrees F or C ____% UEL ____% LEL	NA Degrees F NA % UEL NA % LEL
Vapor Pressure Vapor Density	0 mm/Hg N/a Air = 1	0. mm/Hg N/a Air = 1	0 mm/Hg NA Air = 1
Specific Gravity	11.3 Water = 1	5.61 Water = 1	8.65 Water = 1
Solubility	insol	0.0004%	insol
Incompatible Material	oxidizable organic materials, metals, bases	chlorinated rubber, water decomposes	Strong oxidizers; elemental sulfur, selenium & tellurium
Routes of Exposure	X Inh ____ Abs X Con x Ing	X Inh ____ Abs --Con ____ Ing	X Inh ____ Abs ____ Con X Ing
Symptoms of Acute Exposure	Lassitude, irritation of respiratory system, nasal system perforation, liver, kidney damage, dermatitis	low back pain, vomiting	Pulm edema, dysp, cough, chest tight, subs pain; head; chills, musc aches; nau, vomit, diarr; anos, emphy, prot, mild anemia; [cars]
Ionization Potential	N/a eV	N/a eV	NA eV
First Aid Treatment	Eyes: Irrigate Immediately Skin: Soap flush immediately Breathing: Respiratory support Ingestion: Immediate medical support	Breathing: Respiratory support	Eyes: Irrigate Immediately Skin: Soap flush immediately Breathing: Respiratory support Ingestion: Immediate medical support
Instruments for Detection	____ PID w/ ____ Probe ____ FID ____ CGI ____ RAD ____ Det Tube ____ pH Other Data Ram	____ PID w/ ____ Probe ____ FID ____ CGI ____ RAD X Det Tube ____ pH Other ____	____ PID w/ ____ Probe ____ FID ____ CGI ____ RAD ____ Det Tube ____ pH Other ____

Control Measures

Site Map with work zones:



Work Zone Definitions:

Exclusion Zone - the area where contamination is either known or expected to occur and the greatest potential for exposure exists. The outer boundary of the Exclusion Zone, called the Hotline, separates the area of contamination from the rest of the site.

Contamination Reduction Zone (CRZ) - the area in which decontamination procedures take place. The purpose of the CRZ is to reduce the possibility that the Support Zone will become contaminated or affected by the site hazards.

Support Zone - the uncontaminated area where workers are unlikely to be exposed to hazardous substances or dangerous conditions. The Support Zone is the appropriate location for the command post, medical station, equipment and supply center, field laboratory, and any other administrative or support functions that are necessary to keep site operations running efficiently.

Communications:

(X) Buddy System ( ) Radio ( ) Air Horn for emergencies
(X) Hand Signals (X) Visual Contact

Personnel Decontamination Procedures:

( ) Wet Decontamination (procedures as follows)
(X) Dry Decontamination (procedures as follows)

Level D: Remove gloves and dispose in trash, wash hands and face prior to eating
Level C: Remove gross contamination Remove Outer Gloves, Tyvek, Respirator, Inner Gloves double bag dispose on site,
Level B: Remove gross contamination Remove Outer Gloves, SCBA, Saranex, Inner Gloves double bag dispose on site,

Equipment Decontamination Procedures:

( ) None
( ) Wet Decontamination (procedures as follows)
(X) Dry Decontamination (procedures as follows)

Wipe gross decontamination from equipment and dispose as IDW in secure area on-site for disposal by USEPA subcontractor.

Adequacy of decontamination determined by: _____

Personal Protective Equipment

TASK TO BE PERFORMED	ANTICIPATED LEVEL OF PROTECTION	TYPE OF CHEMICAL PROTECTIVE COVERALL	INNER GLOVE OUTER GLOVE BOOT COVER	TYPE OF APR CARTRIDGE OR CANISTER
Initial visual survey	Level D	N/A	Blue Nitrile gloves, latex booties	N/A
Initial Entry/ Survey/ Inventory	Level D	Tyvek	Blue Nitrile gloves, latex booties	N/A
Drum Sampling	Level B	Saranex	Blue Nitrile inner/Green Nitrile outer/ latex booties	SCBA
Field Screening	Level C	Saranex	Blue Nitrile inner/Green Nitrile outer/ latex booties	GME-P100
Field Screening	Level D	Tyvek	Blue Nitrile inner/Blue Nitrile outer/ latex booties	N/A
Soil Sampling	Level D	Tyvek	Blue Nitrile inner/Blue Nitrile outer/ latex booties	N/A

Frequency and Types of Air Monitoring: (X) Continuous ( ) Routine - _____ ( ) Periodic - _____

DIRECT READING INSTRUMENTS	**MultiRAE** CGI/O2-H2S-CO-PHOTO IONIZATION DETECTOR	**Ludlum 19** Micro-R Meter/**Ludlum Model 3** Survey Meter/Probe	**Photovac** Micro FID		OTHER
ID NUMBER					
CALIBRATION DATE					
RST MEMBER					
ACTION LEVEL	≥ 10 - 20% LEL (Confined space/non-Confined space) ≤ 19.5%, O_2 Deficient ≥ 23% O_2 - Enriched UNKNOWNS: 0 - 5 UNITS - "C" 5-500 UNITS-"B"	3X BACKGROUND - CAUTION; 1 mR/HR - LEAVE	UNKNOWNS: 0 - 5 UNITS - "C" 5-500 UNITS-"B"		

Emergency Telephone Numbers

Emergency Contact	Location	Phone Number	Notified
Hospital	Underwood Memorial Hospital	(856).853.2000	No
Ambulance		911	
Police	West Deptford Twp. Police Dept	911	
		(856).845.2300	
Fire Department		911	

Chemical Trauma Capability? ( ) Yes (X) No

If no, closest backup: _____ Phone: _____

Directions to Hospital (See Attached Map) Route verified by: Aaron Levy Date: 04/14/05
From Site start out going Southwest on Crown Point Rd. toward Woodbury Ter. Turn left onto Delaware /CR-640. Turn left on to N Broad St/NJ-45/CR-551. Drive through Woodbury Township, cross over Woodbury Creek and make a left turn onto Red Bank Avenue. Underwood Memorial Hospital is located at this intersection.

Additional Emergency Phone Contacts

WESTON Medical Emergency Service (Dr. Sandra Dorsey)	1-800-874-4676 (Day time)
	1-410-507-3325 (24 hrs)
WESTON Medical Emergency Service	800-229-3674
Chemtrec	800-424-9300
ATSDR	404-639-0615
ATF (explosives information)	800-424-9555
National Response Center	800-424-8802
National Poison Control Center	800-764-7661

HASP prepared by: Gezahegne Bushra Date: 04/14/05
Pre-Response/Entry Approval by: _____ Date: 4/12/05
Verbal Approval/Modification to Original HASP by: _____ Date: __/__/__

Description of Site and Response Activities

Size of Site: _____ Terrain: _____ Weather: _____

Distance to Nearest:

Residence _____ School _____ Hospital _____

Public Building _____ Nearest Waterway: _____ - (name)_____

Other _____

Evacuation: ( ) Yes ( ) No By Whom: _____

Condition	Observed	Potential	None	Comments/Observations
Surface Water Contamination				
Ground Water Contamination				
Drinking Water Contamination				
Air Release				
Soil Contamination				
Stressed Vegetation				
Dead Animal Species				

Action Taken On-Site:

Perimeter Monitoring:( ) Yes ( ) No
Site entry by RST: ( ) Yes ( ) No

Tasks Conducted	Level of Protection/Specific PPE Used

Hazardous Waste Site and Environmental Sampling Activities

Off Site: ( ) Yes ( ) No
On Site: ( ) Yes ( ) No

Describe types off samples and methods used to obtain samples: _____
_____
_____
_____
_____

Was laboratory notified of potential hazard level of samples? ( ) Yes ( ) No

Note: The nature of the work assignment may require the use of the following procedures/programs which will be included as attachments to this HASP as applicable: Emergency Response Plan, Confined Space entry Procedures, Spill Containment Program.

Disclaimer: This Health and Safety Plan (HASP) was prepared for work to be conducted under the Removal Support Team (RST) Contract 68-W-00-0113 for Zone I. Use of this HASP by WESTON and its subcontractors is intended to fulfill the OSHA requirements found in 29 CFR 1910.120. Items not specifically covered in this HASP are included by reference to 29 CFR 1910 and 1926.

The signatures below indicate that the individuals have read and understood this Health and Safety Plan.

PRINTED NAME	SIGNATURE	AFFILIATION	DATE

Final Submission of HASP by:	Gezahegne Bushra	Date: 04/21/05
Post Response Review by:		
Post Response Approval by:		
RST HSO Review by:		

COMMENTS/FOLLOW UP

Air Monitoring Summary Log

Date: __/__/__

Data Collected by: _____

Station/Location	CGI/O_2 Meter	Radiation Meter	PID	FID	Other (_____)

Summary/Comments (data to be summarized by a range of readings, i.e. "Low to High" and/or "Average" by location

_____

_____

_____

Chemical Identification/RIDS

Chemical Name: FUEL OIL, [NO. 2]

Regulatory Name:

NFPA Codes F: 2 **NFPA Codes H:** 1 **NFPA Codes R:** 0 **NFPA Codes S:**

Formula:
DOT:
UN Num:

Sec 112R:	☐	**CAATQ:**	**313:** ☐
EHS:	☐	**EHSTPQ:**	**RCRA:**
CERCLA:	☐	**RQ:**	**CHRIS:** OTW
CAS:	68476-30-2	**STCC:**	

General Description

Oily yellow-brown liquid. Less dense than water and insoluble in water. Floats on water. (USCG, 1999)

Fire Hazard

no data found

Fire Fighting

Fire Extinguishing Agents Not to Be Used: Water may be ineffective

Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide (USCG, 1999)

Protective Clothing

Protective gloves; goggles or face shield. (USCG, 1999)

MATERIAL RATINGS

BARRICADE > 3 hours
BLUE MAX > 3 hours
CPE 1-3 hours
NAT RUB < 1 hour
NEOP < 1 hour
NEOP/NAT RUB < 1 hour
NITRILE < 1 hour
NITRILE+PVC < 1 hour
PE < 1 hour
PE/EVAL/PE > 3 hours
PTFE TEFLON 1-3 hours
PVAL 1-3 hours
PVC < 1 hour
RESPONDER > 3 hours
SILVER SHIELD > 3 hours
VITON > 3 hours

These protective clothing recommendations are based on experimental data for another chemical with similar chemical properties and structure. Because material recommendations for chemicals in the same classification will generally, but not always, be appropriate, use caution when following these recommendations. (NOAA, 1991)

Non-Fire Response

no data found

Health Hazard

INHALATION causes headache and slight giddiness. INGESTION causes nausea, vomiting, and cramping; depression of central nervous system ranging from mild headache to anesthesia, coma, and death; pulmonary irritation secondary to exhalation of solvent; signs of kidney and liver damage may be delayed. ASPIRATION causes severe lung irritation with coughing, gagging, dyspnea, substernal distress, and rapidly developing pulmonary edema; later, signs of bronchopneumonia and pneumonitis; acute onset of central nervous system excitement followed by depression. (USCG, 1999)

Properties

FlashPoint (cc): 136° F (USCG, 1999)

Auto Igtn Temp: 494° F (USCG, 1999)

Melting Point: -20° F (USCG, 1999)

Boiling Point: 540 to 640° F at 760 mm Hg (USCG, 1999)

TLV TWA: 100 mg/m3 As total hydrocarbons. Skin. Suspected Human carcinogen. (ACGIH, 2003)

TEEL1: 7.5 mg/m3 (TEEL, 2003)

TEEL2: 60 mg/m3 (TEEL, 2003)

TEEL3: 500 mg/m3 (TEEL, 2003)

First Aid

INGESTION: do NOT induce vomiting.

ASPIRATION: enforce bed rest; administer oxygen; seek medical attention.

EYES: wash with copious quantity of water.

SKIN: remove solvent by wiping and wash with soap and water. (USCG, 1999)

Reactive Hazards

no data found

NIOSH Pocket Guide to Chemical Hazards

Chlorodiphenyl (42% chlorine)	**CAS** 53469-21-9
$C_6H_4ClC_6H_3Cl_2$ (approx)	**RTECS** TQ1356000
Synonyms & Trade Names Aroclor® 1242, PCB, Polychlorinated biphenyl	**DOT ID & Guide** 2315 171

Exposure Limits	NIOSH REL*: Ca TWA 0.001 mg/m^3 See Appendix A [*Note: The REL also applies to other PCBs.]
	OSHA PEL: TWA 1 mg/m^3 [skin]

IDLH Ca [5 mg/m^3] See: 53469219	**Conversion**

Physical Description
Colorless to light-colored, viscous liquid with a mild, hydrocarbon odor.

MW: 258 (approx)	BP: 617-691°F	FRZ: -2°F	Sol: Insoluble
VP: 0.001 mmHg	IP: ?		Sp.Gr(77°F): 1.39
Fl.P: NA	UEL: NA	LEL: NA	

Nonflammable Liquid, but exposure in a fire results in the formation of a black soot containing PCBs, polychlorinated dibenzofurans & chlorinated dibenzo-p-dioxins.

Incompatibilities & Reactivities
Strong oxidizers

Measurement Methods
NIOSH 5503; PV2089
See: NMAM or OSHA Methods

Personal Protection & Sanitation	**First Aid** (See procedures)
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily Provide: Eyewash, Quick drench	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes; chloracne; liver damage; reproductive effects; [potential occupational carcinogen]

Target Organs Skin, eyes, liver, reproductive system

Cancer Site [in animals: tumors of the pituitary gland & liver, leukemia]

See also: INTRODUCTION See MEDICAL TESTS: 0175

NIOSH Pocket Guide to Chemical Hazards

Phenol	**CAS** 108-95-2
C_6H_5OH	**RTECS** SJ3325000
Synonyms & Trade Names Carbolic acid, Hydroxybenzene, Monohydroxybenzene, Phenyl alcohol, Phenyl hydroxide	**DOT ID & Guide** 1671 153 (solid) 2312 153 (molten) 2821 153 (solution)

Exposure Limits	NIOSH REL: TWA 5 ppm (19 mg/m^3) C 15.6 ppm (60 mg/m^3) [15-minute] [skin]
	OSHA PEL: TWA 5 ppm (19 mg/m^3) [skin]

IDLH 250 ppm See: 108952	**Conversion** 1 ppm = 3.85 mg/m^3

Physical Description
Colorless to light-pink, crystalline solid with a sweet, acrid odor. [Note: Phenol liquefies by mixing with about 8% water.]

MW: 94.1	BP: 359°F	MLT: 109°F	Sol(77°F): 9%
VP: 0.4 mmHg	IP: 8.50 eV		Sp.Gr: 1.06
Fl.P: 175°F	UEL: 8.6%	LEL: 1.8%	

Combustible Solid

Incompatibilities & Reactivities
Strong oxidizers, calcium hypochlorite, aluminum chloride, acids

Measurement Methods
NIOSH 2546; OSHA 32
See: NMAM or OSHA Methods

Personal Protection & Sanitation	**First Aid** (See procedures)
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily Provide: Eyewash, Quick drench	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH/OSHA
Up to 50 ppm: (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s) in combination with a dust and mist filter/(APF = 10) Any supplied-air respirator
Up to 125 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s) in combination with a dust and mist filter
Up to 250 ppm: (APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter/(APF = 50) Any air-

purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having a high-efficiency particulate filter/(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, nose, throat; anorexia, weight loss; lassitude (weakness, exhaustion), muscle ache, pain; dark urine; cyanosis; liver, kidney damage; skin burns; dermatitis; ochronosis; tremor, convulsions, twitching

Target Organs Eyes, skin, respiratory system, liver, kidneys

See also: INTRODUCTION See ICSC CARD: 0070 See MEDICAL TESTS: 0182

NIOSH Pocket Guide to Chemical Hazards

Lead	**CAS** 7439-92-1
Pb	**RTECS** OF7525000
Synonyms & Trade Names Lead metal, Plumbum	**DOT ID & Guide**

Exposure Limits	NIOSH REL*: TWA 0.050 mg/m^3 See Appendix C [*Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.]
	OSHA PEL*: [1910.1025] TWA 0.050 mg/m^3 See Appendix C [*Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.]

IDLH 100 mg/m^3 (as Pb) See: 7439921	**Conversion**

Physical Description
A heavy, ductile, soft, gray solid.

MW: 207.2	BP: 3164°F	MLT: 621°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 11.34
Fl.P: NA	UEL: NA	LEL: NA	

Noncombustible Solid in bulk form.

Incompatibilities & Reactivities
Strong oxidizers, hydrogen peroxide, acids

Measurement Methods
NIOSH 7082, 7105, 7300, 7301, 7303, 7700, 7701, 7702, 9100, 9102, 9105; OSHA ID121, ID125G, ID206
See: NMAM or OSHA Methods

Personal Protection & Sanitation	**First Aid** (See procedures)
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: Daily Remove: When wet or contaminated Change: Daily	Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH/OSHA

Up to 0.5 mg/m^3: (APF = 10) Any air-purifying respirator with a high-efficiency particulate filter/(APF = 10) Any supplied-air respirator

Up to 1.25 mg/m^3: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode/(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter

Up to 2.5 mg/m^3: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode/(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter/(APF = 50) Any self-contained breathing

apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece

Up to 50 mg/m^3: (APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

Up to 100 mg/m^3: (APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypotension

Target Organs Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue

See also: INTRODUCTION See ICSC CARD: 0052 See MEDICAL TESTS: 0127

NIOSH Pocket Guide to Chemical Hazards

Zinc oxide	**CAS** 1314-13-2
ZnO	**RTECS** ZH4810000
Synonyms & Trade Names Zinc peroxide	**DOT ID & Guide** 1516 143

Exposure Limits	NIOSH REL: Dust: TWA 5 mg/m^3 C 15 mg/m^3 Fume: TWA 5 mg/m^3 ST 10 mg/m^3
	OSHA PEL†: TWA 5 mg/m^3 (fume) TWA 15 mg/m^3 (total dust) TWA 5 mg/m^3 (resp dust)

IDLH 500 mg/m^3 See: 1314132	**Conversion**

Physical Description
White, odorless solid.

MW: 81.4	BP: ?	MLT: 3587°F	Sol(64°F): 0.0004%
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 5.61
Fl.P: NA	UEL: NA	LEL: NA	

Noncombustible Solid

Incompatibilities & Reactivities
Chlorinated rubber (at 419°F), water [Note: Slowly decomposed by water.]

Measurement Methods
NIOSH 7303, 7502; OSHA ID121, ID143
See: NMAM or OSHA Methods

Personal Protection & Sanitation Skin: No recommendation Eyes: No recommendation Wash skin: No recommendation Remove: No recommendation Change: No recommendation	**First Aid** (See procedures) Breathing: Respiratory support

Important additional information about respirator selection
Respirator Recommendations NIOSH/OSHA

Up to 50 mg/m^3: (APF = 10) Any dust, mist, and fume respirator/(APF = 10) Any supplied-air respirator

Up to 125 mg/m^3: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode/(APF = 25) Any powered, air-purifying respirator with a dust, mist, and fume filter

Up to 250 mg/m^3: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode/(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter/(APF = 50) Any self-contained breathing

apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece
Up to 500 mg/m^3: (APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation

Symptoms Metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function

Target Organs respiratory system

See also: INTRODUCTION See ICSC CARD: 0208 See MEDICAL TESTS: 0246

NIOSH Pocket Guide to Chemical Hazards

Cadmium dust (as Cd)	**CAS** 7440-43-9 (metal)
Cd (metal)	**RTECS** EU9800000 (metal)
Synonyms & Trade Names Cadmium metal: Cadmium Other synonyms vary depending upon the specific cadmium compound.	**DOT ID & Guide** 2570 154 (compounds)

Exposure Limits	NIOSH REL*: Ca See Appendix A [*Note: The REL applies to all Cadmium compounds (as Cd).]
	OSHA PEL*: [1910.1027] TWA 0.005 mg/m^3 [*Note: The PEL applies to all Cadmium compounds (as Cd).]

IDLH Ca [9 mg/m^3 (as Cd)] See: IDLH INDEX	**Conversion**

Physical Description
Metal: Silver-white, blue-tinged lustrous, odorless solid.

MW: 112.4	BP: 1409°F	MLT: 610°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 8.65 (metal)
Fl.P: NA	UEL: NA	LEL: NA	

Metal: Noncombustible Solid in bulk form, but will burn in powder form.

Incompatibilities & Reactivities
Strong oxidizers; elemental sulfur, selenium & tellurium

Measurement Methods
NIOSH 7048, 7300, 7301, 7303, 9102; OSHA ID121, ID125G, ID189, ID206
See: NMAM or OSHA Methods

Personal Protection & Sanitation	**First Aid** (See procedures)
Skin: No recommendation Eyes: No recommendation Wash skin: Daily Remove: No recommendation Change: Daily	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, ingestion

Symptoms Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]

Target Organs respiratory system, kidneys, prostate, blood

Cancer Site [prostatic & lung cancer]

See also: INTRODUCTION See ICSC CARD: 0020 See MEDICAL TESTS: 0035